Panasonic

ideas for life

# PD50

## Stationary 2D Code Reader

11/2005

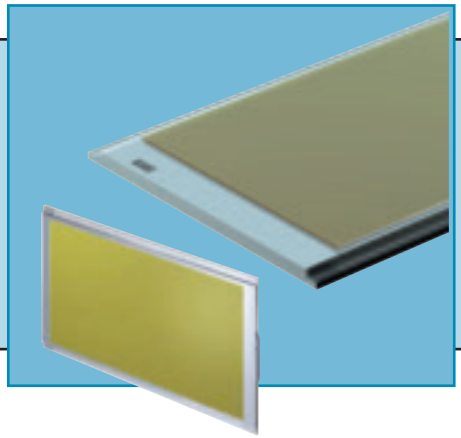
# Stationary 2D Code Reader PD50

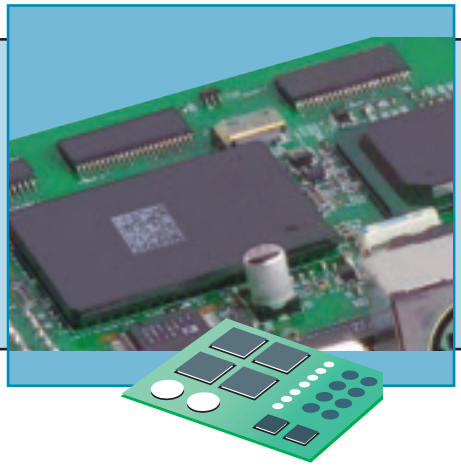
## Overview

High-speed 360° Rotation and Reverse Rotation Inspections
**High accuracy**

Red LED guide light enables
**Easy installation**

Special software enables
**Simple setting**





- *All-in-one design: LED lighting, optics, camera, CPU and interfaces in one compact unit*
- *Can read 2D codes made by inkjet printing, laser marking, stamping, engraving, etc.*
- *Suitable for Data Matrix ECC200 code and QR code*
- *Easy installation and easy setup*
- *Accurate, high-speed reading*
- *Rugged IP67 metal body*
- *Excellent connectivity*

# Stationary 2D Code Reader PD50

## The Hardware

### Integrated design

All components for lighting, optics, image acquisition (camera) and signal processing (CPU) are combined in one unit and are mutually optimised to ensure that reading codes is performed quickly, reliably and with virtually no maintenance.

### Robust aluminium body

PD50 can be used in harsh industrial environments. Its compact aluminium housing and robust connectors conform to the protection class IP67.

### Easy height adjustment with pilot spot system

Two LEDs project red spots on the working surface. The correct working distance is indicated when the two spots intersect and appear as one. This combined spot also shows the centre of the inspection area, which is useful for aligning the sensors' field of view.

## Flexible setup

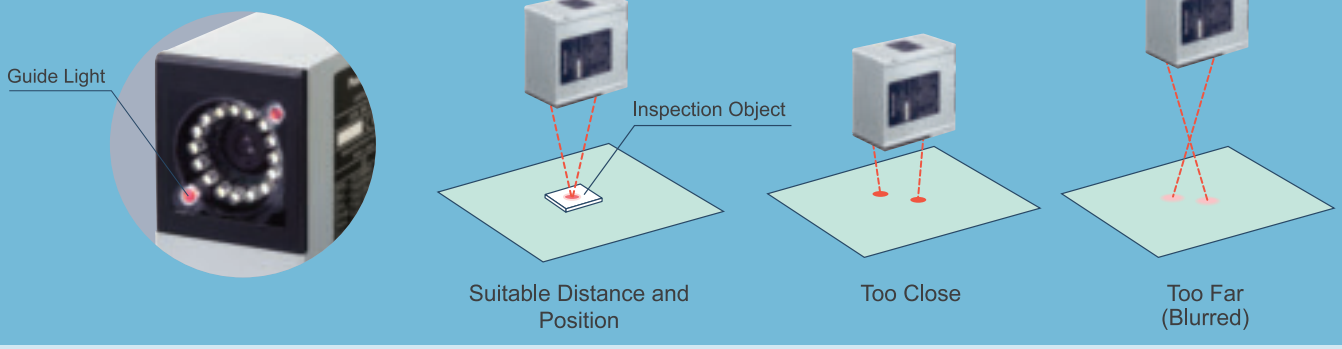
PD50 can be setup in two different ways. If you prefer to configure PD50 with a PC or a notebook, our free software PDTOOL will quickly and easily assist you step-by-step. Automatic teach-in and other useful functions allow even un-experienced users to configure the PD50. Alternatively, if you don't use PCs in your production environment, settings can be done with the Operation and Finder Unit. These small, panel-mountable devices can also monitor images and results during inspection.

## 360° high-speed reading

PD50 can read codes, regardless of their rotation angle. As long as the code is within the sensor's field of view, it will be read reliably, even if partially stained, destroyed, mirrored or even reversed. Thanks to its RISC CPU, PD50 can achieve a processing time of only 30 ms.

## Integration made easy

PD50 can be easily integrated into existing machines. While decoding results are output via its RS232 port, signals for the inspection trigger, program change, readability flag, etc. are handled by the digital interface. Furthermore, PD50 can be easily connected to our GT series touch-screen displays because both devices communicate via MEWTOCOL. These displays are a good solution, if customised user interfaces are required.



# Stationary 2D Code Reader PD50

## The Software

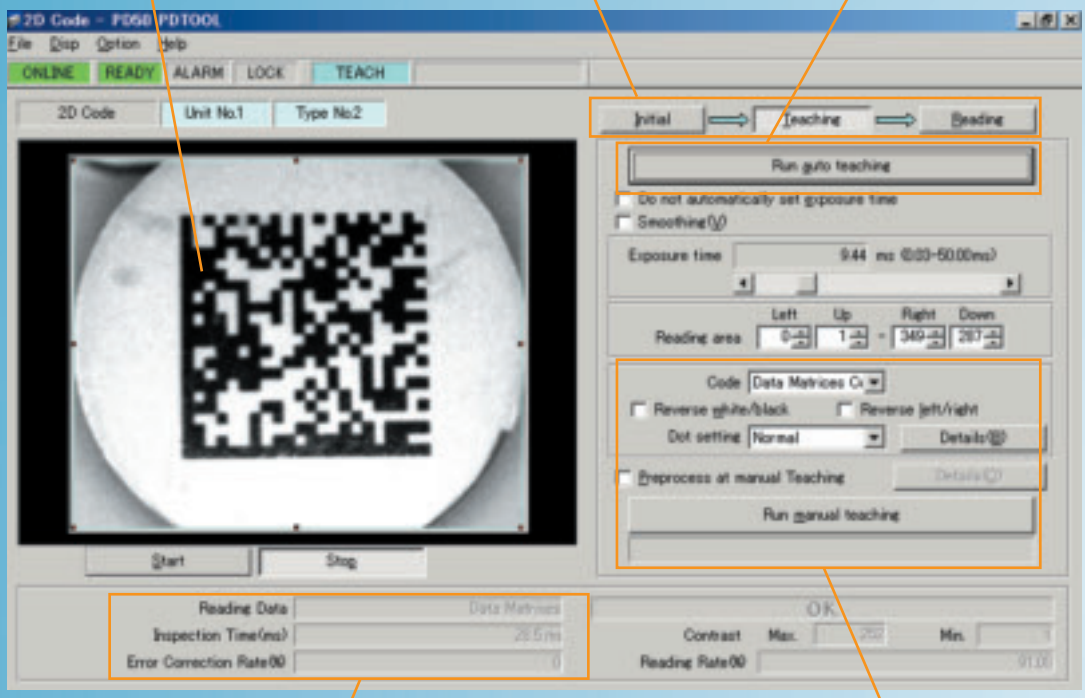
### Easy-to-use setup software PDTOOL

You can configure the PD50 with the optional Operation and Finder Units or – even more comfortably – with our free-of- charge Windows-based software PDTOOL. First-time users easily grasp the settings principles and are aided by such functions as auto-teaching.

Just use the mouse to move the inspection area position or change the size.

After setting the inspection area, you can perform teaching with one click using a non-defective code sample. The exposure time and the 2D code type are automatically detected, eliminating complicated setting processes.

The setting flow indicator shows you what to do next at a glance.



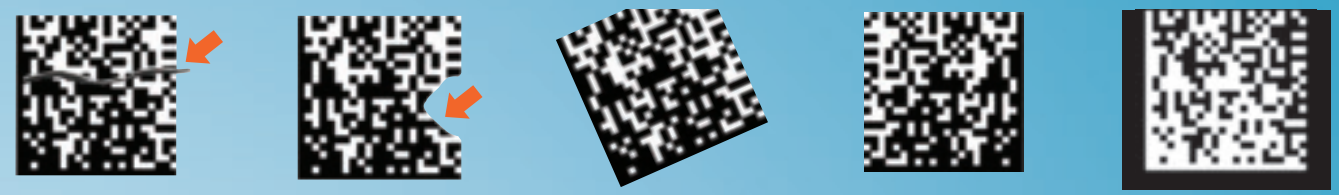

The code type to be read is indicated.

The detail setting mode allows you to configure the code setting, settings for black/white reversed code and horizontally flipped code, etc.

**Free-of-charge download at:**
**www.lightpix.net**

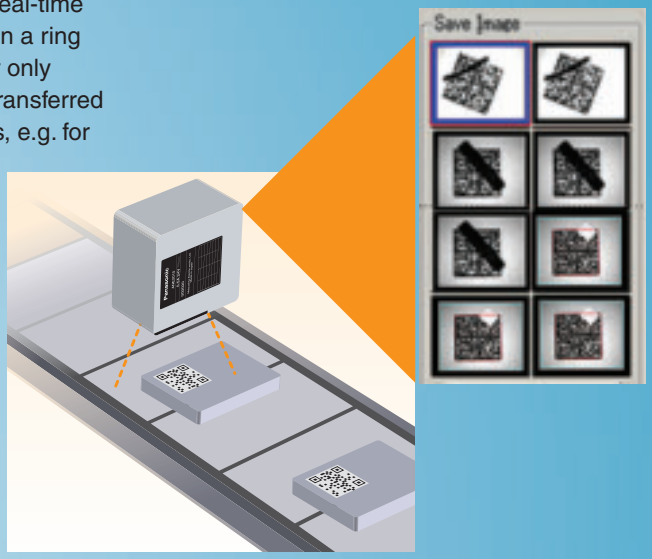
## Excellent decoding capabilities

PD50 reads Data Matrix ECC200 and QR codes. The codes can be created by printing, laser marking, engraving, etching and stamping. Furthermore, even distorted, displaced or inversed codes can be read reliably.



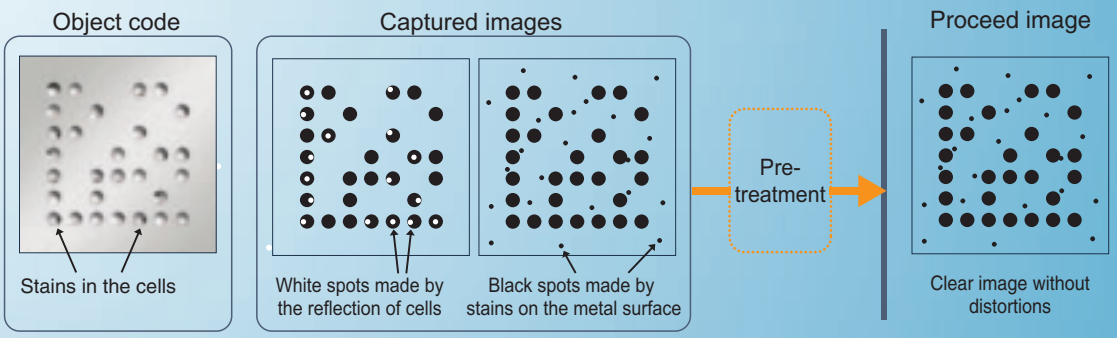

## Real-time image storage

Being equipped with a dedicated image memory, PD50 allows real-time image storage during inspection. Up to 8 images can be saved in a ring buffer. You can define whether to save each inspection image or only images with negative inspection results. These images can be transferred to PDTOOL, where they can be viewed or stored as Bitmap files, e.g. for quality control reports.




## Superior robustness

Thanks to its pre-processing functions, PD50 can read stamped or engraved codes on metal surfaces. Possible distortions caused by material reflections, oil, oxidation or other impurities, for example, will be filtered out reliably, resulting in a clear and de-codable image.


Object code
Captured images
Proceed image
Stains in the cells
White spots made by the reflection of cells
Black spots made by stains on the metal surface
Pre-treatment
Clear image without distortions

# Stationary 2D Code Reader PD50

## System Configuration

### Overview

AETOOL

USB1.1

LVDS

Operation/Finder Unit

The finder image shown here has been reduced in resolution, so is darker that the actual screen image.

RS232C

GT11

or

PC

I/O

PLC

or

Fiber Sensor

USB: Easy connection to PC (PDTOOL) dedicated port with USB1.1 using standard cable.

LVDS: Low Voltage Differential Signal method. Attachment of finder unit screen is possible for checking inspection results. Settings can also be altered using the switches on the front panel.

RS232C: Can be connected to other Panasonic display devices and PCs and inspection results can be easily monitored and settings easily changed.

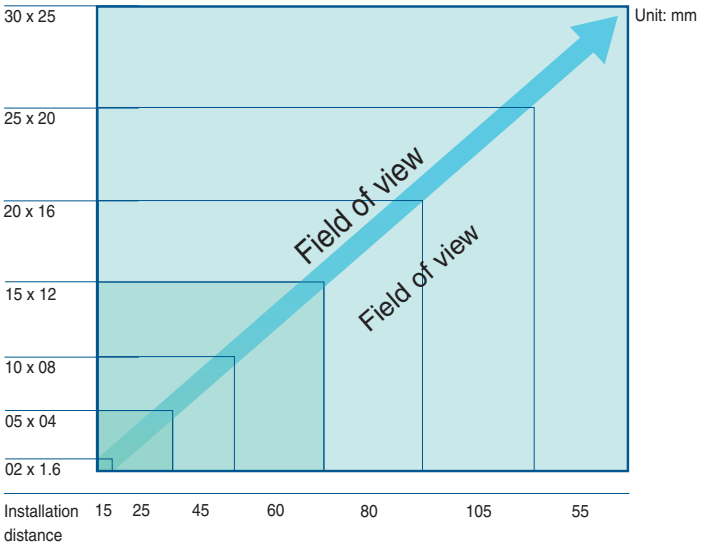
I/O: Connection to PLC or sensor. The PLC has functions installed to interpret inspection results as a trigger signal for the sensor, as a switch for the product type or as teaching input.

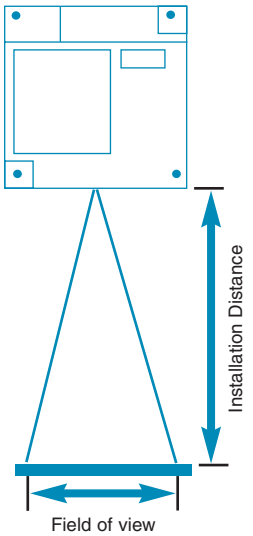
ANE2803
RS232C Cable

ANE2813
Operation Unit Cable

ANE2823
RS232C +
Operation Unit Cable

### Types of Main Units



# Technical Specifications

## Main Units

| Item | | Specification | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Order Number | | ANPD050-02 | ANPD050-05 | ANPD050-10 | ANPD050-15 | ANPD050-20 | ANPD050-25 | ANPD050-30 |
| Configuration | | Via software free of charge software PDTOOL or optional Operation/Finder unit | | | | | | |
| Field of view W x H (mm) | | 2 x 1.6 | 5 x 4 | 10 x 8 | 15 x 12 | 20 x 16 | 25 x 20 | 30 x 25 |
| Minimum Cell Size (µm) | | 28 x 28 | 71 x 71 | 139 x 139 | 213 x 213 | 284 x 284 | 355 x 355 | 434 x 434 |
| Installation distance (mm) | | 15 ± 0.5 | 25 ± 1.5 | 45 ± 2.5 | 60 ± 3.0 | 80 ± 4.0 | 105 ± 5.5 | 55 ± .0 |
| Sensing element | | Colour-CMOS with 330.000 pixels | | | | | | |
| Resolution | | 352 x 288 pixels | | | | | | |
| Detection capability | | Min. 5 pixels per cell | | | | | | |
| Integrated light | | White LED, light amount half-life: min. 30.000 h (at 25°C) | | | | | | |
| Exposure time | | 0.03 to 50 ms | | | | | | |
| Visual pilot beam | | Red LED | | | | | | |
| Interfaces | Serial | RS232C (when using optional cable)<br>1.200 – 57.6000 bit/s, 8 bit ASCII, full duplex | | | | | | |
| | Digital I/O | 5 Opto-coupler inputs, max. 30 VDC<br>(trigger, teach, 3 x type change)<br>5 PhotoMOS outputs, 5-24 VDC<br>(ready, alarm, 3 x data) | | | | | | |
| | Others | USB 1.1 for communication with PC (98SE, ME, 2000, XP)<br>LVDS for communication with Operation/Finder Unit | | | | | | |
| Processing time | | ≥ 30 ms | | | | | | |
| Operation voltage | | 24 VDC ± 10% | | | | | | |
| Current consumption | | ≤ 0.5 A | | | | | | |
| Ambient temperature use/storage | | 0 to +40°C / -20 to +60°C | | | | | | |
| Ambient humidity | | Usage and storage: 35 to 85% RH (@ 25°C no freezing or condensation) | | | | | | |
| Housing | | IP67[1], aluminium | | | | | | |
| Weight | | Approx. 400 g (Main Unit) | | | | | | |

[1] Expect when USB cable is connected

## 2D Code Reading

| Item | | | Specification | |
|---|---|---|---|---|
| Readable code type | Data matrix ECC200 | Matrix Size | Square codes: 10 x 10 cells to 44 x 44 cells<br>Rectangular codes: 8 x 18 cells, 8 x 32 cells, 12 x 26 cells, 12 x 36 cells, 16 x 36 cells, 16 x 48 cells | The matrix size is automatically identified. |
| | | Supports black/white reversed codes, horizontally-flipped codes, and dots. | | |
| | QR code | Model | Model 1 and Model 2 | The model, matrix size, and the error correction level are automatically identified. |
| | | Matrix Size | Model 1: 21 x 21 cells to 49 x 49 cells (Ver. 1 to 8)<br>Model 2: 21 x 21 cells to 49 x 49 cells (Ver. 1 to 8) | |
| | | Error correction level | L (7%), M (15%), Q (25%), H (30%) | |
| | | | Supports black/white reversed codes, horizontally-flipped codes, and dots. | |

## Operation Unit

| | ANE12 |
|---|---|
| Display | 2-inch colour LCD |
| Backlight life | 40,000 (at 25°C)Δ |
| Housing material | Plastic |
| Weight | Approx. 200g |

## Finder Unit

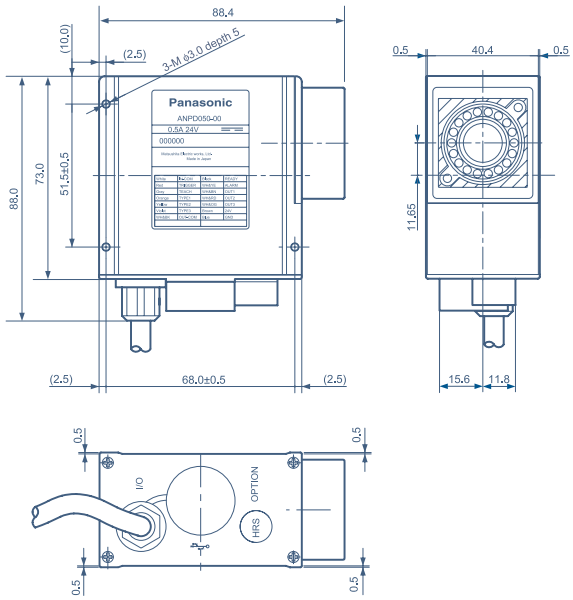
| | ANE11 |
|---|---|
| Display | 7-segment, 3 colours |
| Setting function | Mode, SET, Parameter, Type, Trigger, UP/DOWN |
| Housing material | Plastic |
| Weight | Approx. 200g |

# Stationary 2D Code Reader PD50

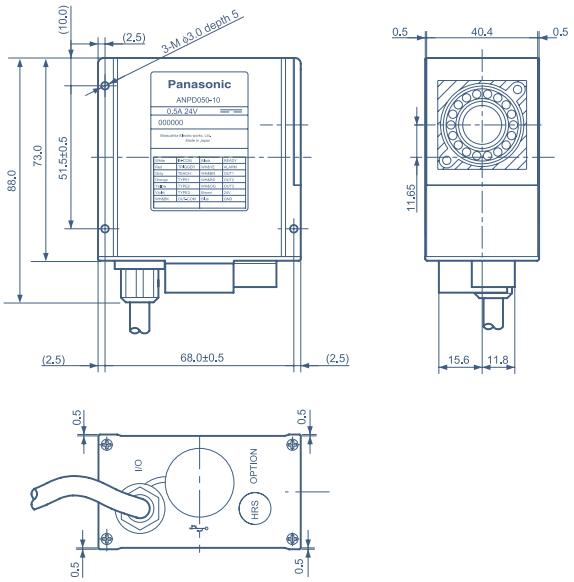
## Technical Specifications/Dimensions

### Main Units

ANPD050-02

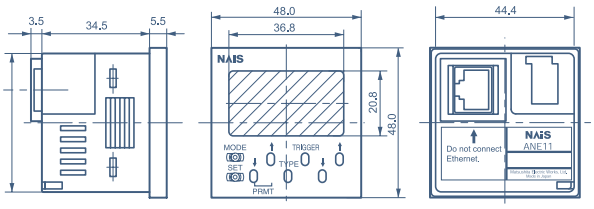



ANPD050-05•10•15•25•30



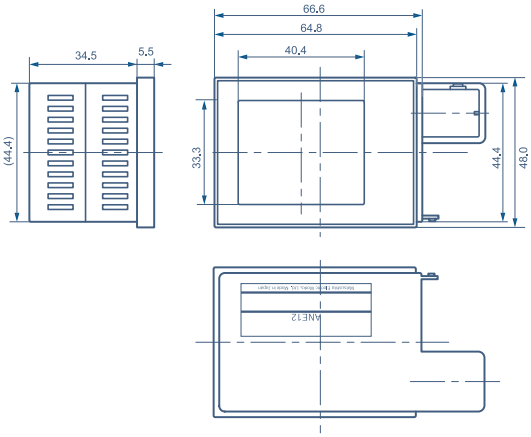

### Operation Unit

ANE11




### Finder Unit

ANE12




All dimensions are in mm.

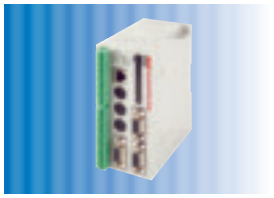
# Related Products

## Vision Sensor

Our newly developed LightPix AE20 combines the ease of use of a conventional photoelectric sensor with the inspection possibilities of an entry-level vision system. It is fast, cost effective and suitable for various two-dimensional sensing tasks.

## Compact Machine Vision Systems Imagechecker A100/200

A100/200 Machine Vision systems are our entry-level compact system with multi-purpose functionality. With dimensions of just 120 x 40 x 70mm, the A-Series Imagechecker is one of the smallest of its kind. It allows high-speed, dual-camera processing (A200) with a robust and mature stand-alone hardware.



## Colour Image Processing Systems AX30/AX40

Once colour-related product failures require detection, AX30/AX40 are the perfect solution. They evaluate images of up to two cameras with respect to minute colour differences, checks objects features, measures dimensions, compares patterns and much more.

## High-Speed Machine Vision System PV300

PV300 combines the merits of A- and AX-Series Imagecheckers. Furthermore, it is equipped with a second processor and thus allows ultra-high-speed inspection.

## PC-Based Machine Vision

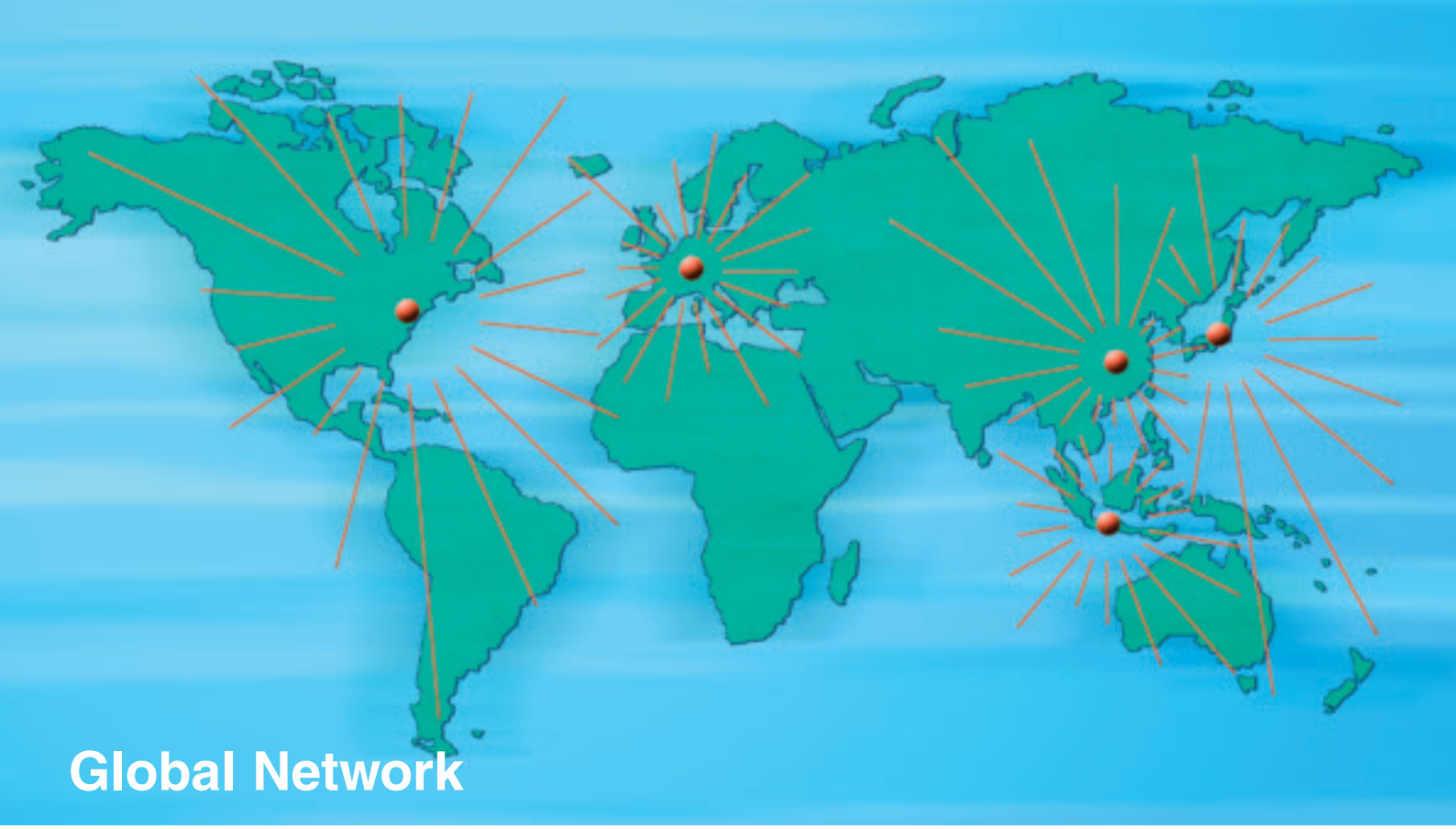
P400 and P400S Imagecheckers represent the next generation of PC-based Machine Vision. The systems are user-friendly and offer multiple functions for a wide range of sophisticated industrial inspection applications. High-end solutions materialise with a simple mouse-click.

## High-End Machine Vision: Imagechecker AG50

One of the most demanding Machine Vision applications is the surface inspection of discrete parts. The Imagechecker AG50 is an extremely powerful device that solves such complex tasks quickly, reliably and with precision.

## Laser Marking Systems

Accurate and distinct non-removable marking of almost any product can be achieved with our Laser Markers. We offer various $CO_2$ and FAYb models ranging from 12 to 30 Watt.



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